

REMARKS

Claim Rejections – 35 U.S.C. 103

Claims 1 to 2, 4 to 12 and 79 to 82

Claims 1 to 2, 4 to 12 and 79 to 82 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent No. 5,231,063, of Fukumoto in view of U.S. Patent No. 5,700,438 of Miller.

Applicant submits that the present claims, are clearly allowable over Fukumoto and Miller.

Fukumoto teaches a composite adsorbent, which can comprise an acid, a transition metal compound, water and an acid salt selected from the group consisting of acid salts of a m-aromatic amino acid and a p-aromatic amino acid. Fukumoto does not teach sulphuric acid at between about 0.1 to 4 percent by volume of solution as claimed in the present claims.

Fukumoto teaches the addition of an acid in “an excess amount”. (col. 2, line 51; col. 3, lines, 15-18; and col. 6, lines 41-45) Further, Fukumoto attributes the addition of excess acid to the second aspect of the present invention, explicitly stating that “the second aspect of the present invention was realized by the addition of an excess acid”. (col. 2, lines 51-53) Fukumoto also discloses the specific utility and benefit of using an excess amount of acid which: 1) permits the “removal of offensive odours originating from basic gases”; and 2) allows for “the coexistence of an aromatic amino acid with a transition metal compound”. (col. 2, lines 52-57) Finally, in Example 2, Fukumoto directs the addition of the acid “in an excess amount” with respect to the preparation of the compositions disclosed. Consequently, Applicant submits that an excess amount of acid is a clear teaching and requirement of the compositions disclosed in Fukumoto. [Emphasis added]

In spite of the foregoing teachings of Fukumoto, the Examiner has stated that the comment in Fukumoto at col. 3, lines 44-45 "for a better effect, they may be used in the form of solution in an adequate concentration", teaches lower concentrations of sulfuric acid. Applicant has studied this text and simply cannot agree with this conclusion. Fukumoto, as set out above, clearly teaches an "excess amount" and to interpret the word "adequate" to contradict this clear teaching is certainly incorrect.

In fact, Applicant submits that by explicitly teaching and requiring the addition of "excess acid", Fukumoto actually teaches away from the lower volume of sulfuric acid claimed in the present application.

The Examiner is reminded that construing prior art elements is not sufficient to render the claimed invention obvious if the results would not have been predictable to one of ordinary skill in the art because of a teaching away in the prior art (MPEP 2143, summarizing *United States v. Adams*, 383 U.S. 39, 51-52, 148 USPQ 479, 483-84 (1966)) and "When the prior art teaches away from combining certain known elements, discovery of successful means of combining them is more likely to be nonobvious." (*KSR International Co. v. Teleflex Inc.*, 550 U.S., 82 USPQ2d 1385, 1395-97 (2007)).

In case the Examiner continues to allege that Fukumoto teaches a sulfuric acid concentration in the claimed range, Applicant has conducted tests to study the effect of such concentrations on the operation of Fukumoto. In particular, Applicant has conducted tests on the single sulfuric acid composition disclosed in Fukumoto and identified as "Sample No. 3" therein (the "Fukumoto Composition") and on five variations to the Fukumoto Composition (the "Alternative Blends"), each variant comprising different volumes of sulfuric acid falling within the 0.1 to 4 percent by volume range claimed in the above-identified patent application. Applicant has also conducted tests on compositions claimed in the above-identified patent application comprising volumes of sulfuric acid falling within the 0.1 to 4 percent by volume range claimed (the "Claimed Compositions").

Each composition was tested for hydrogen sulfide removal employing the same procedure.

The Fukumoto Composition and each of the Alternative Blends were found to be unstable. It was observed that the Fukumoto composition and all of the Alternative Blends that were prepared separated out of solution with the formation of precipitate. In contrast, each of the prepared Claimed Compositions remained as clear solutions.

Furthermore, the results demonstrate that, as the sulfuric acid component of the Fukumoto Composition was reduced, its ability to absorb hydrogen sulfide diminished.

The results also demonstrated that the Claimed Compositions are clearly superior for hydrogen sulfide removal over the Fukumoto Composition or any of the Alternative Blends prepared. Neither the Fukumoto Composition nor any of the Alternative Blends are nearly as capable of removing hydrogen sulfide.

In view of the foregoing, it is clear that Fukumoto does not teach or suggest a sulfuric acid amount in the range of 0.1 to 4 percent by volume. As evidence of this conclusion, we have shown that the compositions are not stable and cannot be kept in solution and second, their effectiveness is diminished within that range. Therefore Applicant requests that the rejection be withdrawn.

Miller discloses a solution comprising a copper compound and a water soluble amine. Miller does not teach or suggest the addition of an amine to a composition comprising sulphuric acid nor a composition comprising a volume of sulphuric acid as claimed in the present application and therefore adds nothing to Fukumoto which would render the claims obvious.

Claims 51 to 64

Claims 51 to 64 were rejected under 35 USC 103(a) as being as being unpatentable over U.S. Patent No. 5,231,063, of Fukumoto in view of U.S. Patent No. 5,700,438 of Miller.

Independent claims 51 and 61 each claim a method for removing a sulphur compound or carbon dioxide from a fluid comprising the step of "preparing a solution according to any one of the above claims". The present application requires the quantity of the

sulphuric acid component claimed to be between about 0.1 to 4 percent by volume of the solution. Applicant submits that the present claims, are clearly allowable over Fukumoto and Miller.

As presented earlier, the composite adsorbent disclosed in Fukumoto does not teach a sulphuric acid component in the range of between about 0.1 to 4 percent by volume.

Miller adds nothing to Fukomoto which would render the claimed invention obvious.

Thus, in view of the foregoing, applicant respectfully requests that the Examiner reconsider and withdraw the claim rejections under 35 USC 103(a) based on the various cited references.

Conclusions

In light of the foregoing, applicant submits that the claims are in a condition for allowance.

Respectfully submitted,



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